AHPS Products and Procedures

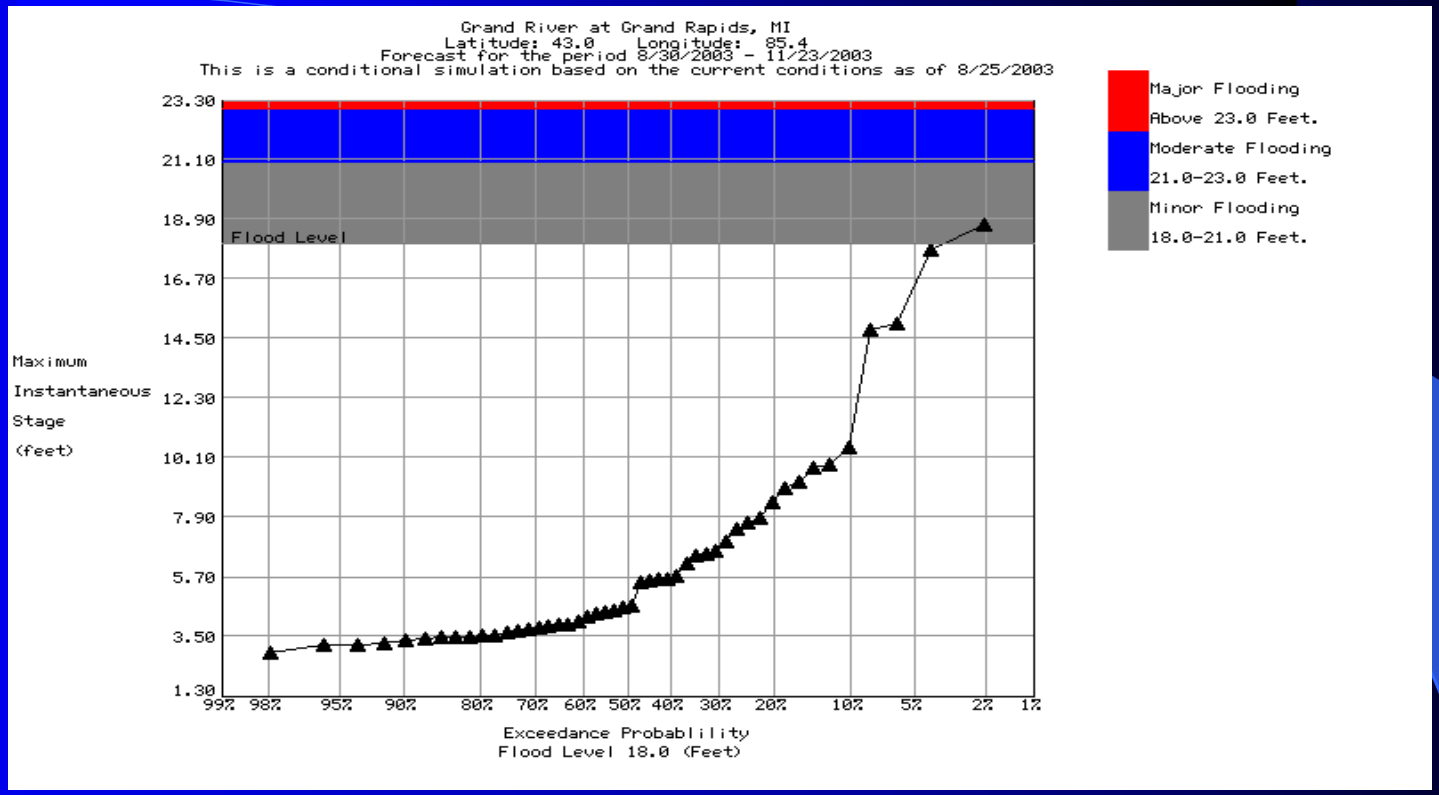
Presented to the RISC Mitigation Sub-Committee
Chicago, IL

September 18, 2003

Prepared by North Central River Forecast Center

The FINAL PRODUCT….

90 Day Stage Exceedence Plot - - Grand Rapids



Question: How did we get here?

Answer: Ensemble Streamflow Prediction *or* ESP

What does ESP do?

- Output data types: stage, flow, reservoir inflow volumes, etc
- Analysis window set for period of interest (currently 90 days)

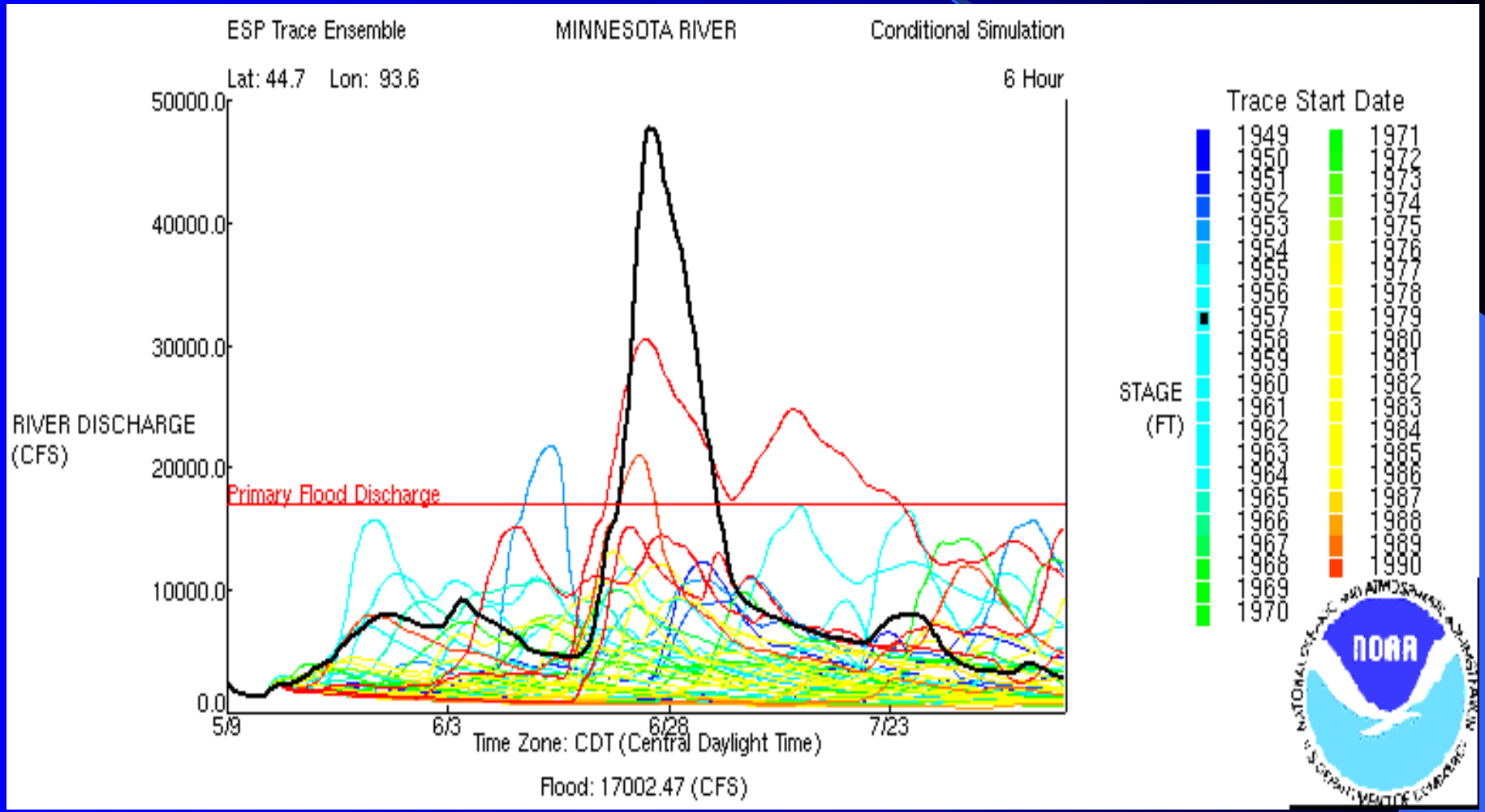
What happens…..
(Nut Shell Version)

Historical Data is combined with ***Forecast Data*** to produce ***Input Files***. These are combined with the ***Current Model States*** to produce ***Streamflow Hydrographs*** for each year of historical data.

For example,

- The precipitation and temperature data from 1986 are run through the ESP model using current model states. This produces a hydrograph which shows what would happen to the current streamflow if 1986 climate data were to actually occur this year.

ESP Trace Ensemble for Minnesota River at Jordan Using 1949-1993 Historical Data

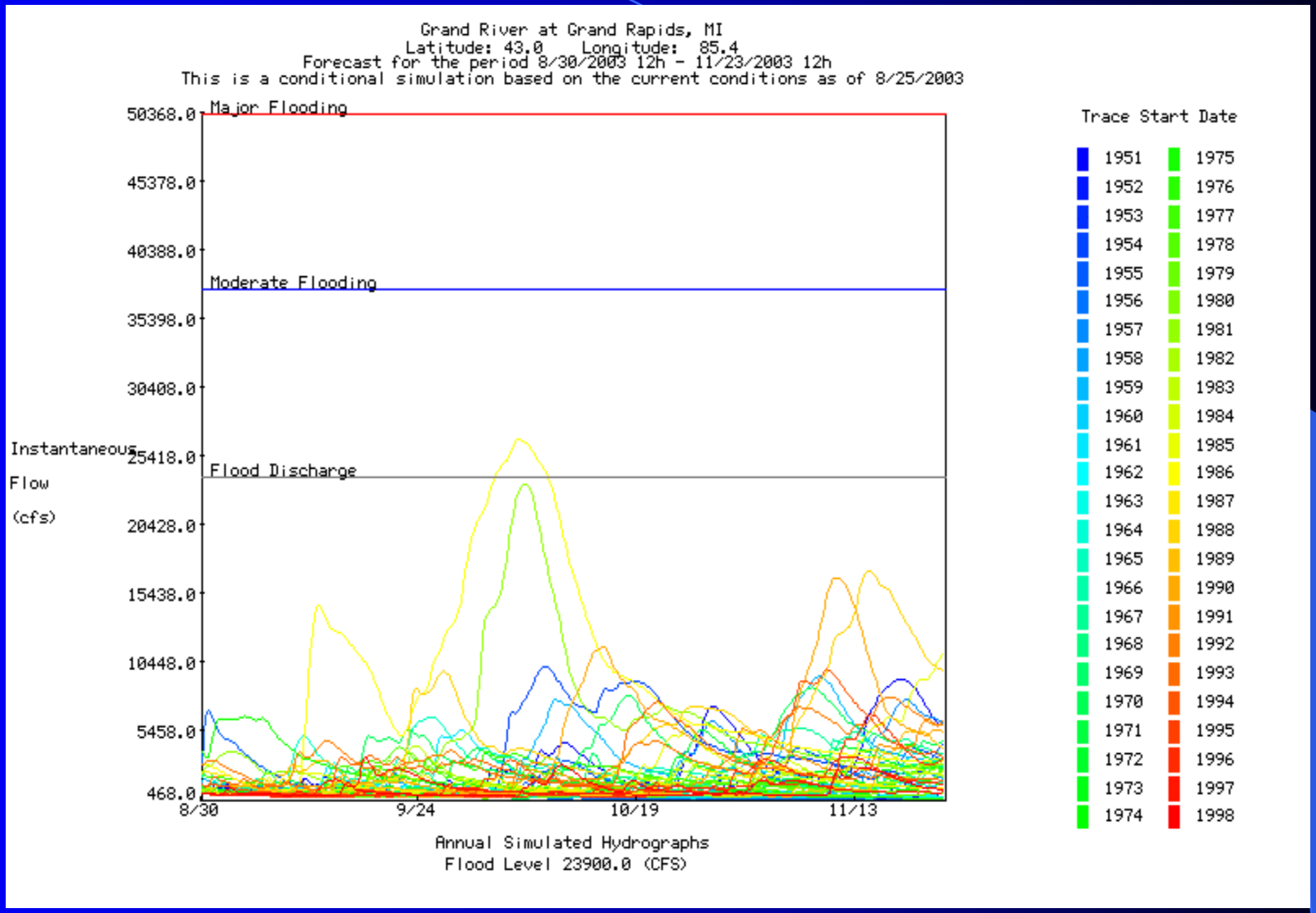


Output Examples

NCRFC Products

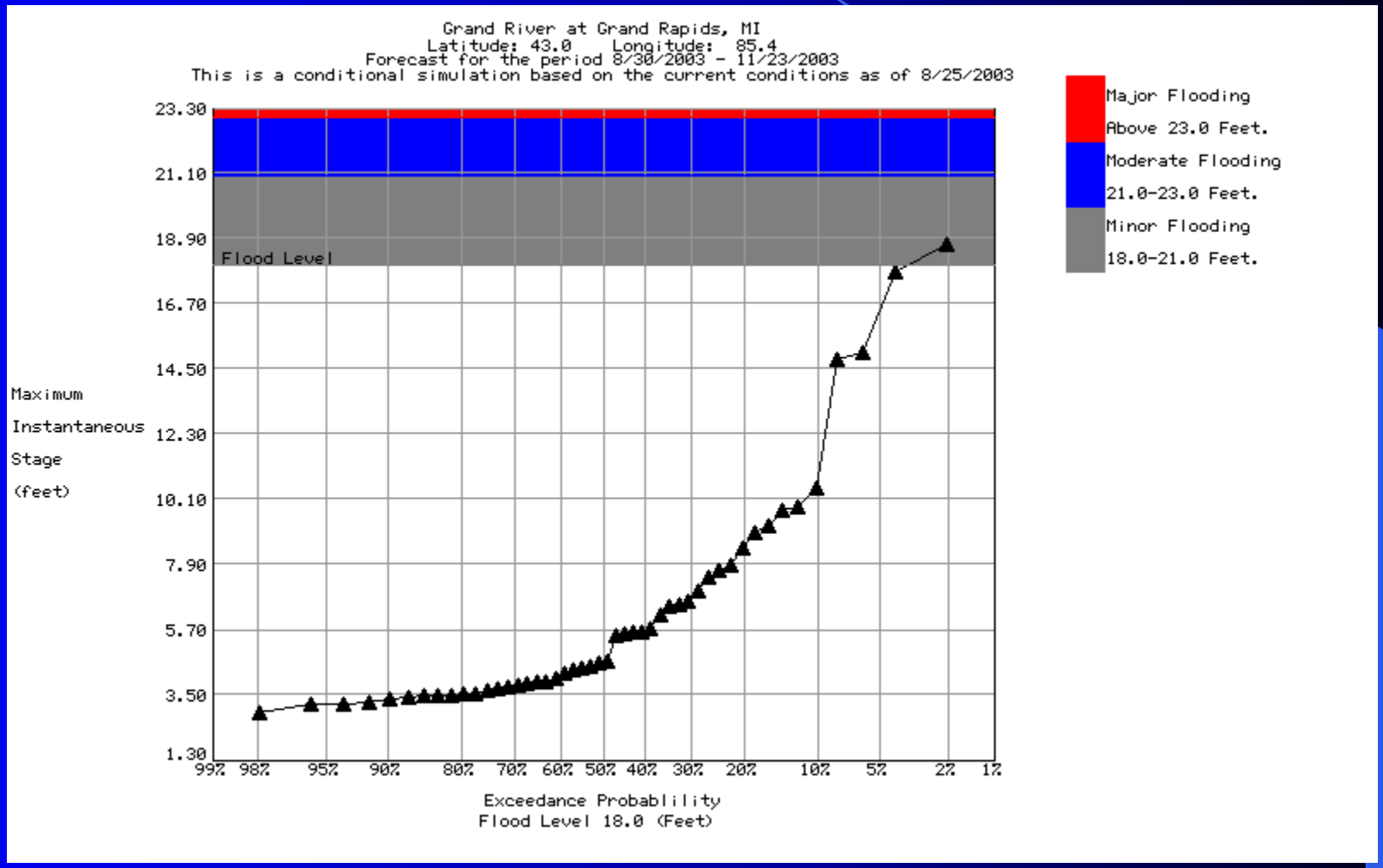
- Graphical Products
  - Individual hydrograph traces
  - Exceedance probability curves
  - Exceedance probability histograms (weekly interval)
- Text Products
  - RVF – 5 day, 6 hourly forecast time series
  - LPO – long range probabilistic outlook (90 day probability table – issued as ESG)

90 Day Trace Plot - Grand Rapids

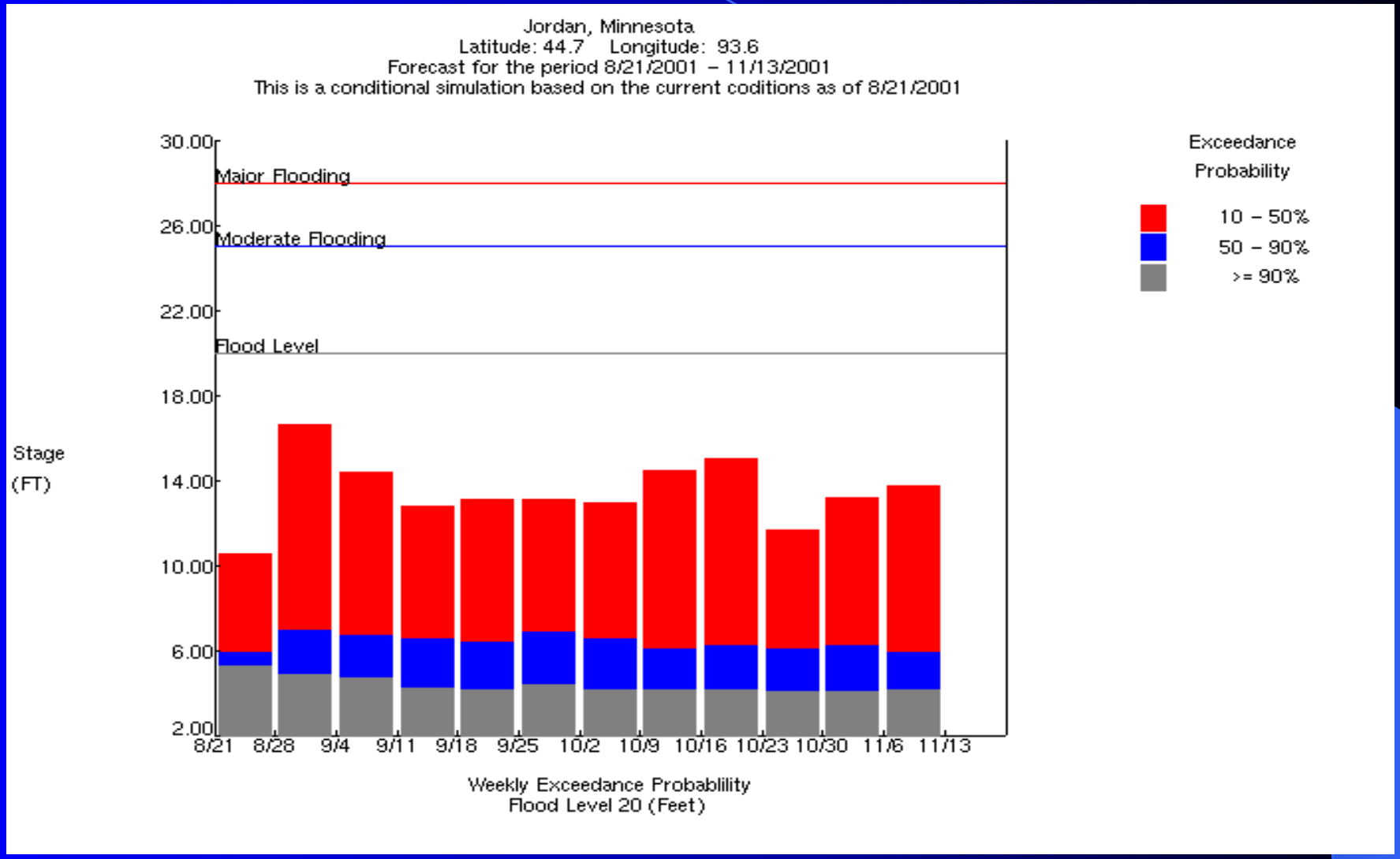


90 Day Stage Exceedance Plot

Grand Rapids



Weekly exceedance probability 90 day window



Probabilistic Exceedance Text Product

File Edit Search Preferences Shell Macro Windows Help

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ZCZC MSPESGGND ALL
TTAA00 KMSR DDHHMM

LONG-RANGE PROBABILISTIC OUTLOOK
NWS NORTH CENTRAL RIVER FORECAST CENTER TWIN CITIES/CHANHASSEN MN
1257 PM CDT THU SEP 4 2003

.B MSR 0904 Z DH12 /DC0309041257/DRD+6/DVD90/HGVFZX9/HGVFZX8/HGVFZX7
.B1 /HGVFZX6/HGVFZX5/HGVFZX4/HGVFZX3/HGVFZX2/HGVFZX1

:                 Chance of Exceeding Stages at Specific Locations
:                         Valid  8/30/2003 - 11/23/2003
:
:         90%    80%    70%    60%    50%    40%    30%    20%    10%
:         ---    ---    ---    ---    ---    ---    ---    ---    ---
:Red Cedar R
 WMSM4    2.5/   3.2/   3.9/   4.2/   4.6/   5.0/   5.2/   5.5/   7.0
 ELNM4    3.3/   3.6/   3.8/   3.9/   4.1/   4.2/   4.4/   4.6/   5.4

:Looking Glass R
 EAGM4    1.3/   1.7/   1.9/   2.0/   2.3/   2.5/   2.9/   3.2/   3.8

:Maple R
 MRPM4    2.8/   3.5/   4.0/   4.6/   4.9/   5.4/   6.1/   7.6/   8.5

:Thornapple R
 HSTM4    3.3/   3.6/   3.7/   3.8/   4.1/   4.3/   4.5/   5.0/   5.9
 CLDM4    3.2/   3.7/   3.9/   4.0/   4.5/   4.7/   5.4/   5.9/   7.3

:Rogue R
 ROCM4    4.3/   4.6/   4.9/   5.2/   5.4/   5.9/   6.1/   6.5/   7.1

:Flat R
 SMYM4    3.7/   3.8/   3.9/   4.2/   4.5/   4.7/   5.2/   5.5/   5.9

:Grand R
 JACM4    9.4/   9.6/   9.7/   9.9/  10.3/  10.7/  11.2/  11.4/  11.9
 ETNM4    3.4/   3.6/   3.7/   3.8/   3.8/   4.0/   4.1/   4.3/   4.5
 DMDM4    3.1/   3.4/   3.5/   3.7/   3.9/   4.2/   4.3/   4.5/   4.8
 LNSM4    2.7/   3.3/   3.6/   3.8/   4.3/   4.6/   5.0/   5.5/   7.1
 GDLM4    4.9/   5.3/   5.4/   5.5/   5.7/   5.8/   5.9/   6.2/   7.1
 PORM4    5.5/   6.1/   6.2/   6.4/   6.5/   6.8/   7.0/   7.4/   8.3
 IONM4    8.5/   9.4/  10.0/  10.4/  10.9/  11.7/  12.6/  14.4/  16.8
 LWLM4    5.1/   5.8/   6.1/   6.5/   6.8/   7.3/   7.9/   9.1/  10.4
 ADAM4    7.2/   8.1/   8.4/   8.8/   9.3/  10.0/  10.7/  12.4/  14.4
 GDRM4    3.4/   3.5/   3.8/   4.2/   4.6/   5.7/   6.8/   8.6/  10.9

:Long-range probabilistic outlooks will be issued near the end of
:the month throughout the year.

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Summary

Advantages of AHPS Probabilistic Products

- These products can be used for contingency forecasts
  - Low/high flow scenarios
  - Worst case scenarios using specific years of historical data (manual year weighting)
  - On the web at: www.crh.noaa.gov/ahps

THE END